

GEORGE ENGELMANN
BOTANICAL NOTEBOOKS

Pagination Note:

Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.

5 tab

31

P. Pinea

470-4



0 1 2 3 4 5 6 7 8 9 10

cm

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MISSOURI
BOTANICAL
GARDEN

MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

11483



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cm

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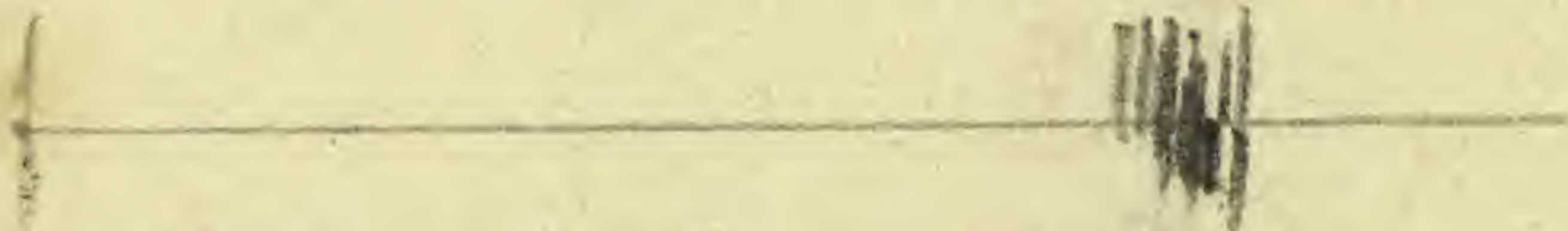
MISSOURI
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Pinus Pinea

June 1864
11th July 1865

Size of Pollen
x 415

Beyrouth, Kotschy 528 (1855)
male ament sent by Cosson



$\frac{15.8 - 17.6 \text{ mostly } 16.8}{415} = 0.038 - 0.043$
mostly 0.040 lin

$\frac{32.8 - 36.8 \text{ mostly } 35}{415}$
0.079 - 0.090
mostly 0.084 mm



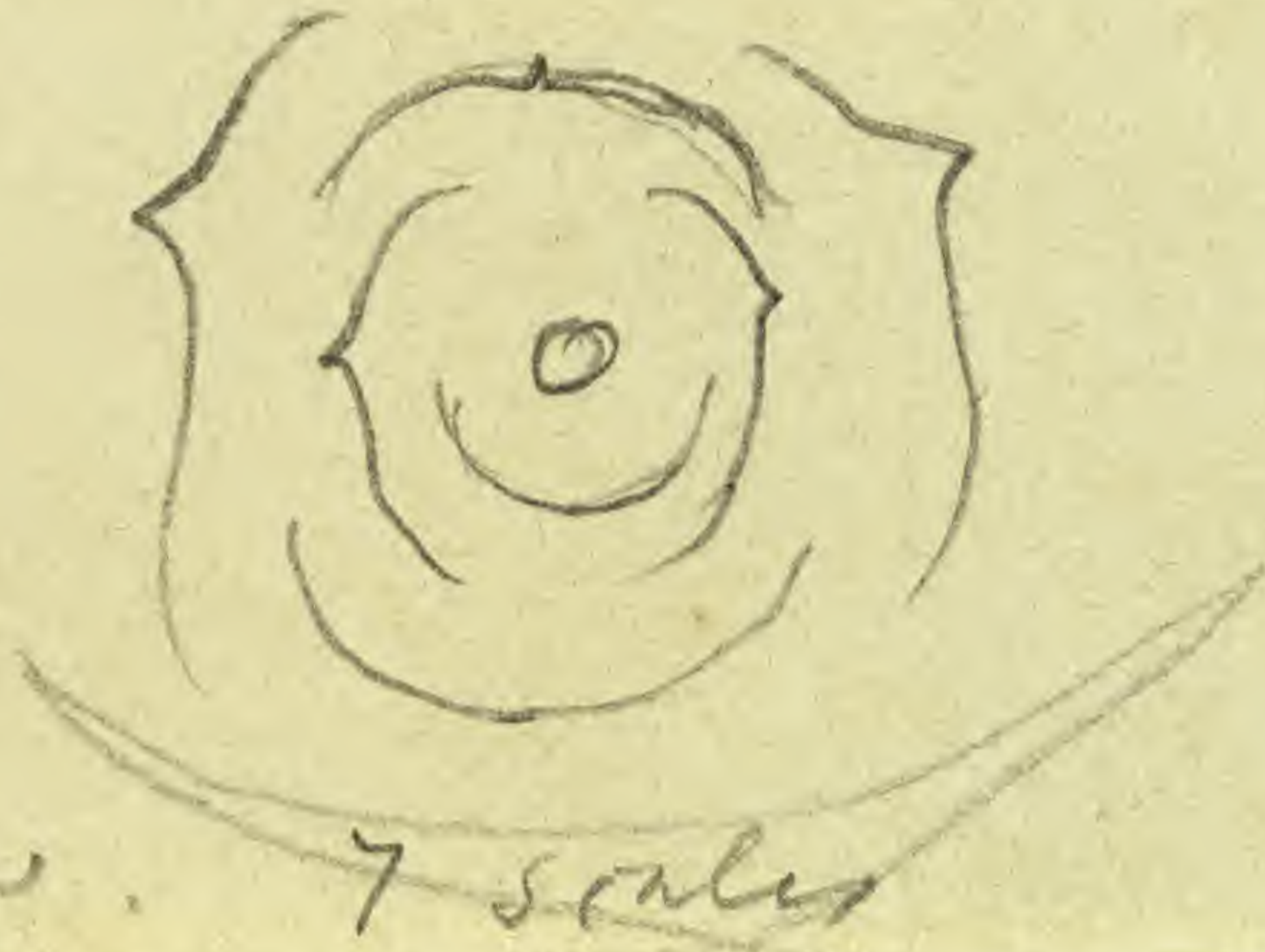
anther x 10



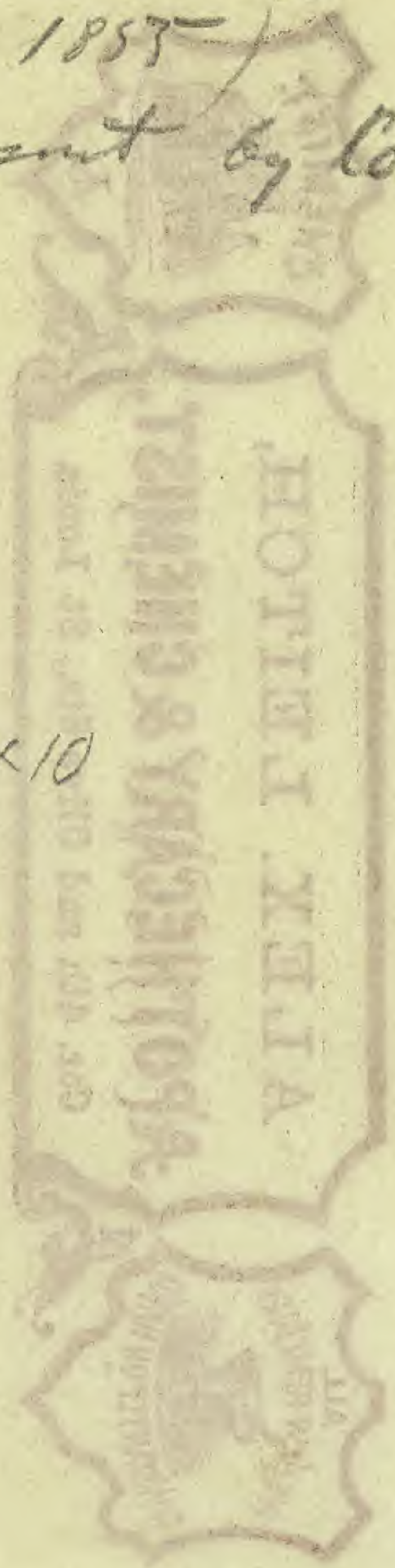
x4



posterior view



7 scales



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Pinus pinaster L

April 24 1865

Naples March 1858.



lower
side

upper

shell very
thick

albumen

x4

2 embryos with 11 cotyle
2 ———— 12 "

Cotyleds not quite half
the length of the whole
abt twice its diameter



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cm

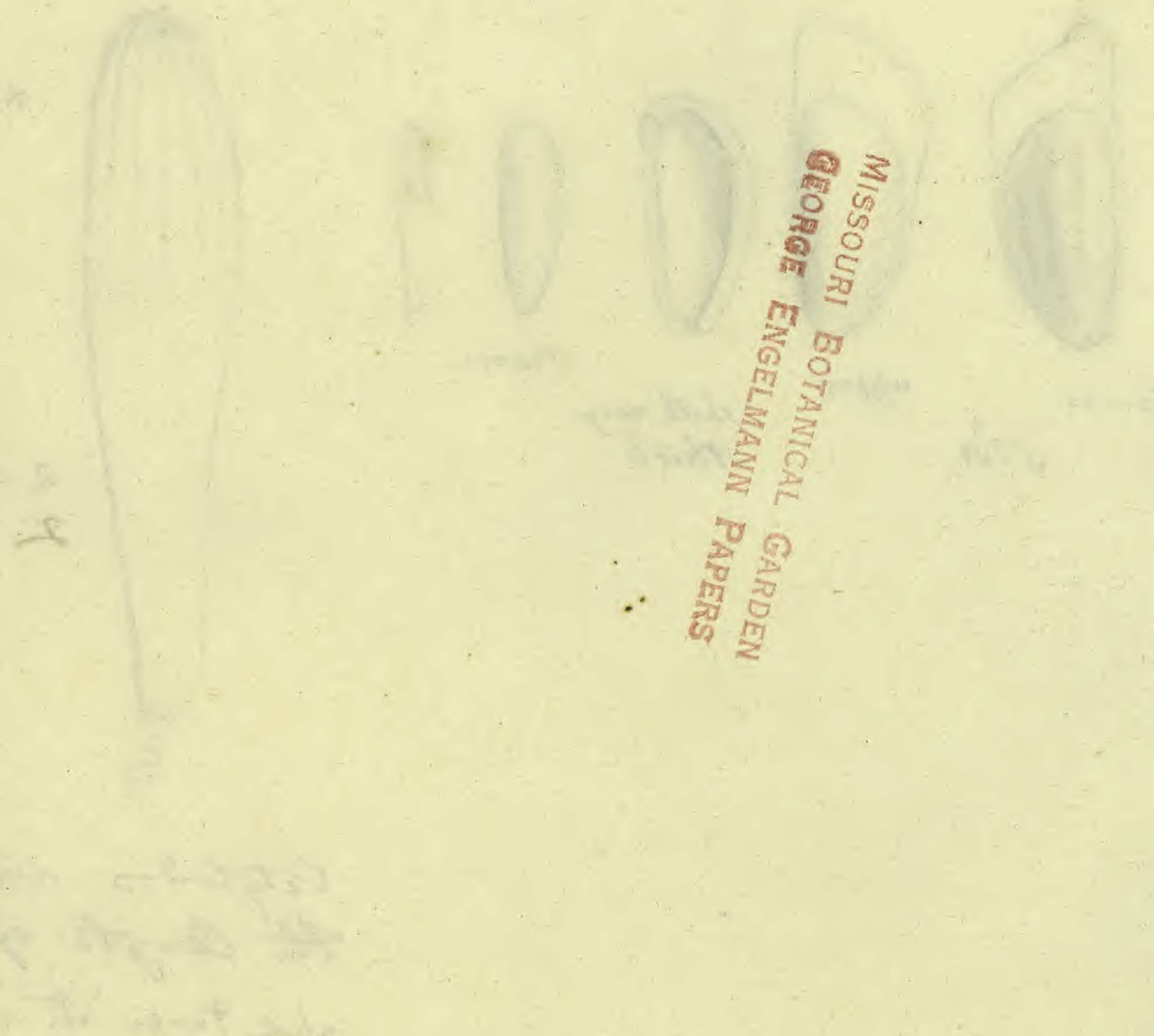
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Pinus Pinna

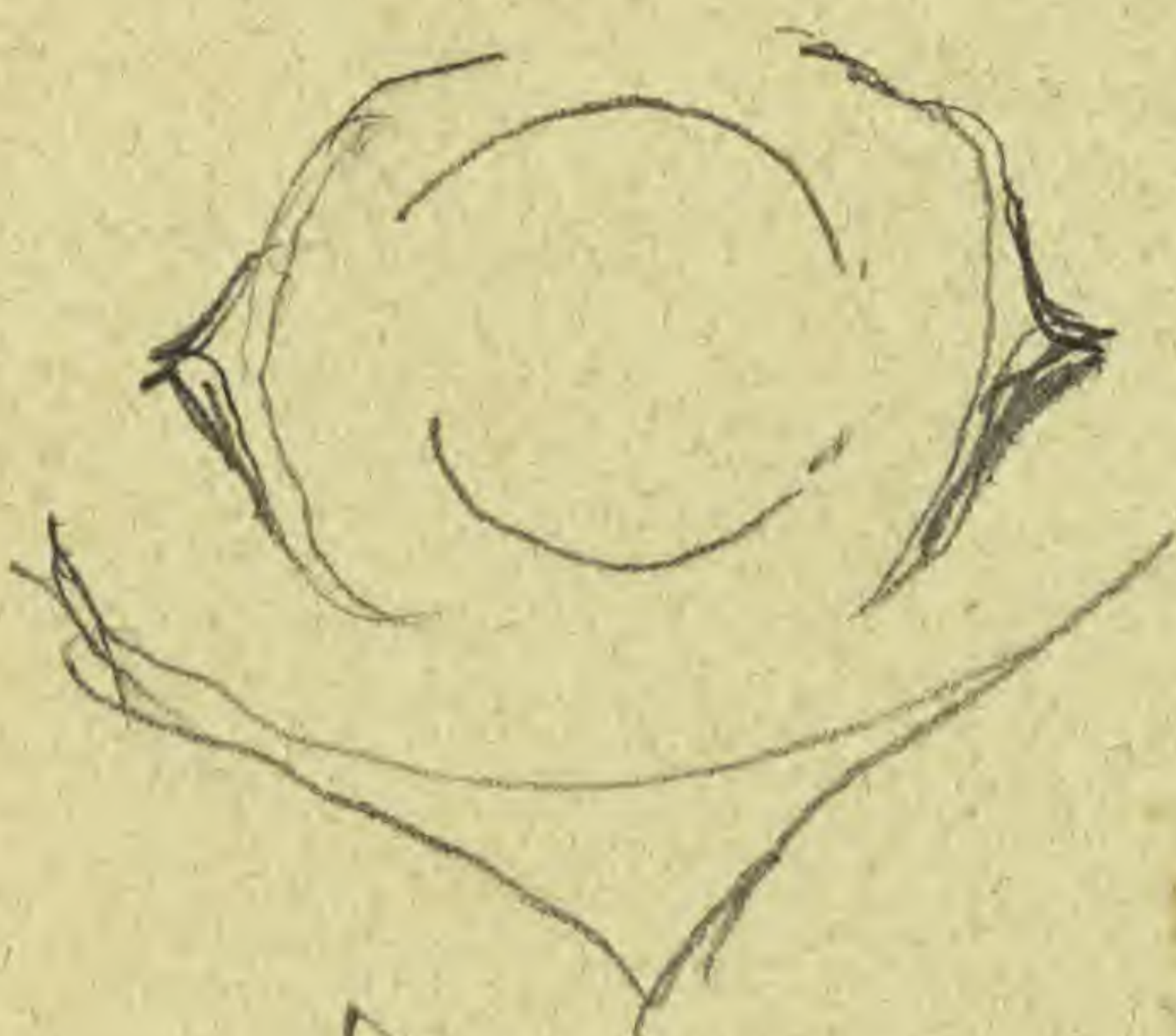
Berlin Jun 7 1858

not quite in bloom
colt in a pot - stem
1 inch diam. 6 feet high

x4



*bractes persistentes
cinnabate recurvate*



ordinary case



very rare



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July 11 1865

Pinus pinna

Pisa, Savi

ex hb. Casson

X4



scales of cone
patulous, or
recurved, obtuse
strongly keeled
above

similar to *Pinus*
maritima



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Pinus Pinca

May 5 1878

Italy

Common 2 leaved form

leaves in 3's

x 30



x 30

x 30

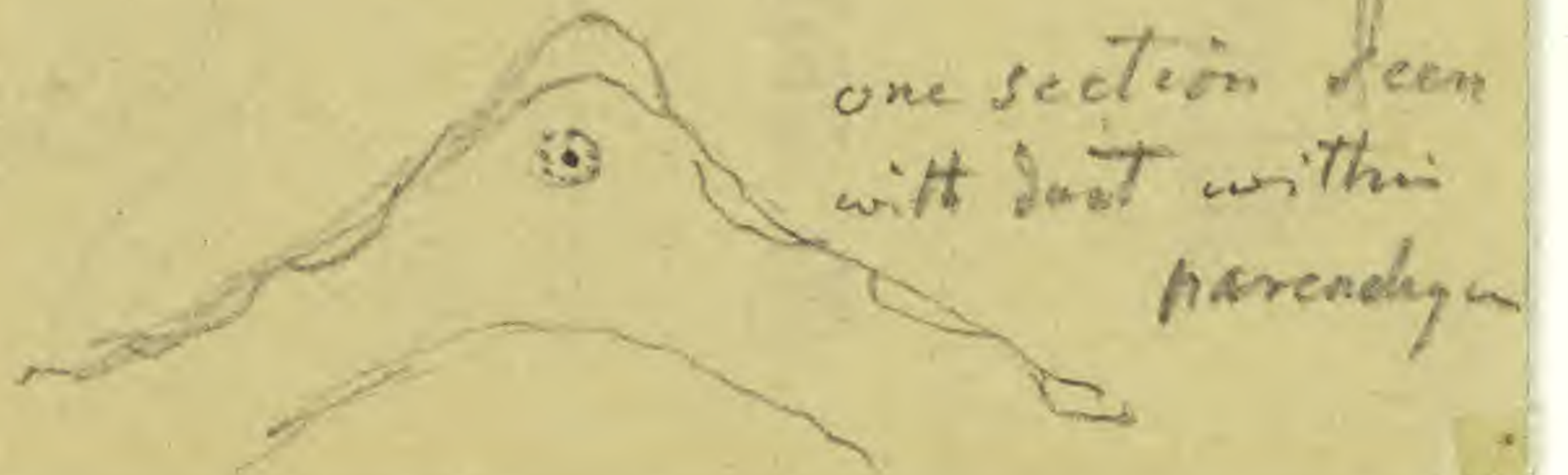
hypoderm = bundles, all around.
single marginal duct very small
surrounded by hypoderm.
no hypoderm cells in sheath



x 60

x 70

x 150



one section seen
with duct within
paraclype



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6 Feb

34

P. Halepensis

484-9



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Pinus Halepensis

Oct 4 1867

ex Herb. Bernharti HB. Mill



0.028

not sufficiently soaked?

X4



0.034



X10



0.036



0.029

0.034 - 0.036

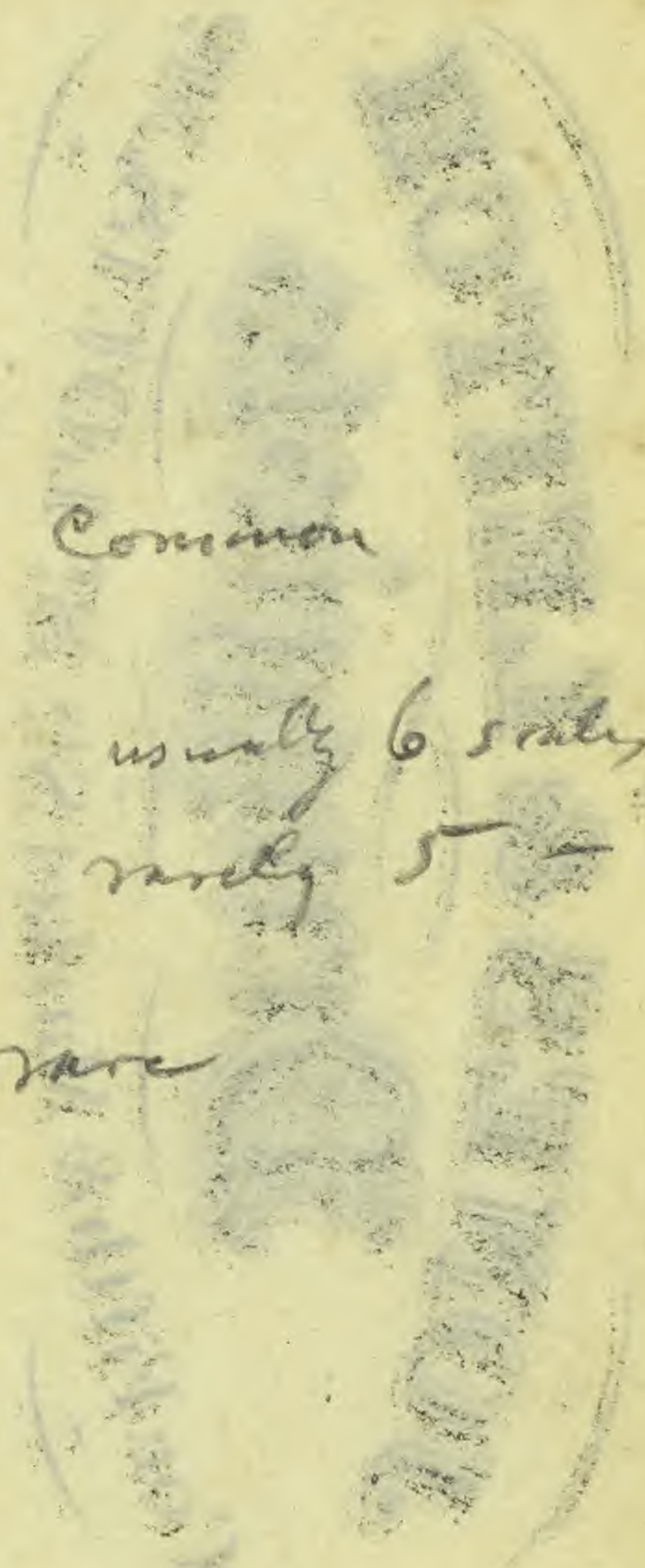


Common

usually 6 scales

rarely 5

rare



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cm

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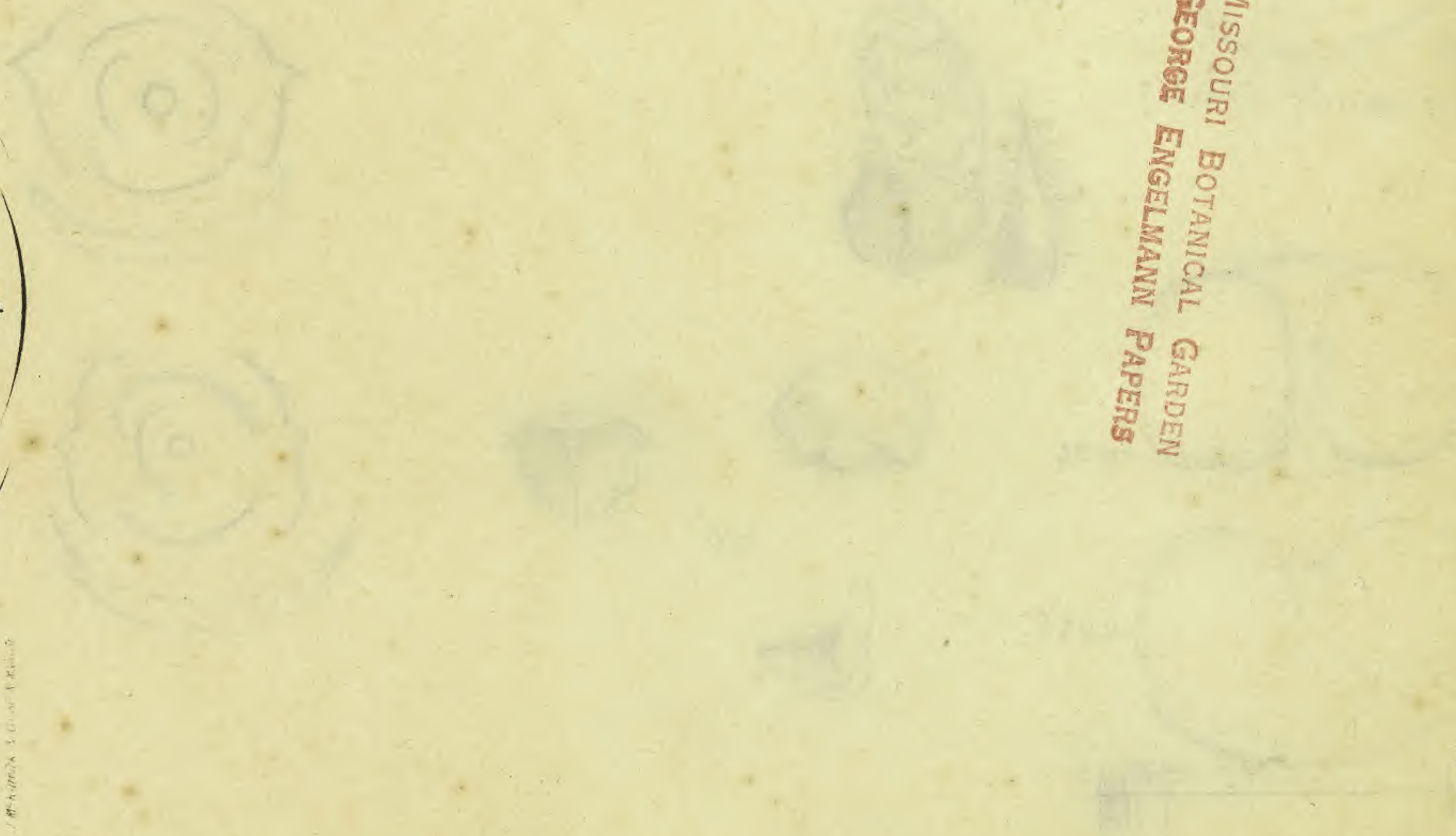
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Pinus Halapensis

Octob 6 1863

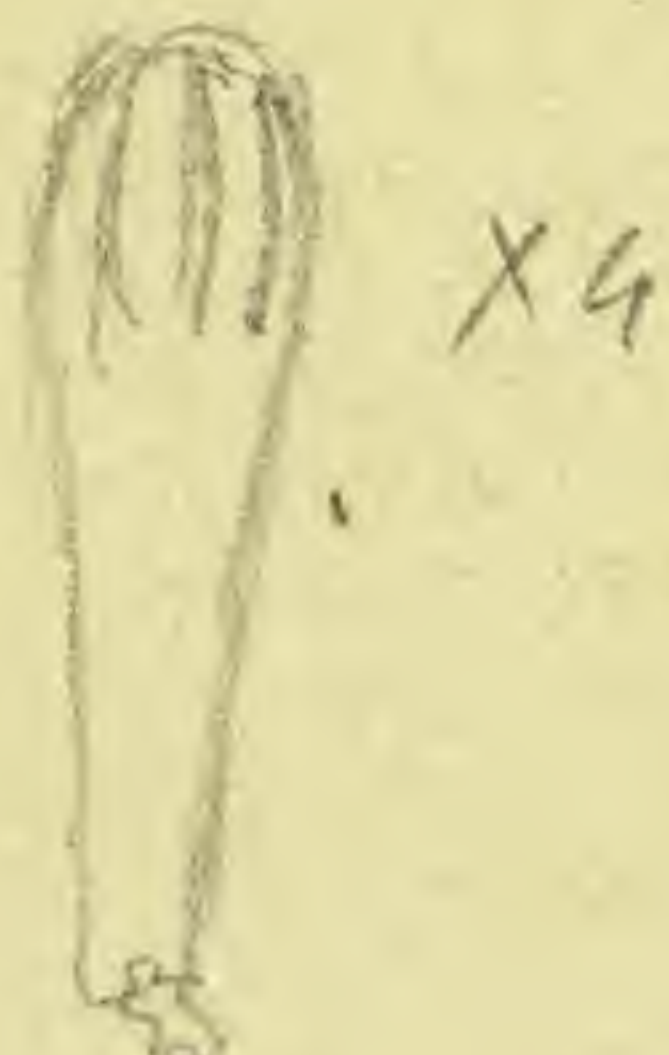
Verniere 1858



9 Cotyl



6 Cotyl



x4

x10



young plant

& Cotyled

ready 7

albumen x4
of different sized seeds

2 seeds expand. 6

3 - - - - - 7

1 - - - - - 9 Cotyledons



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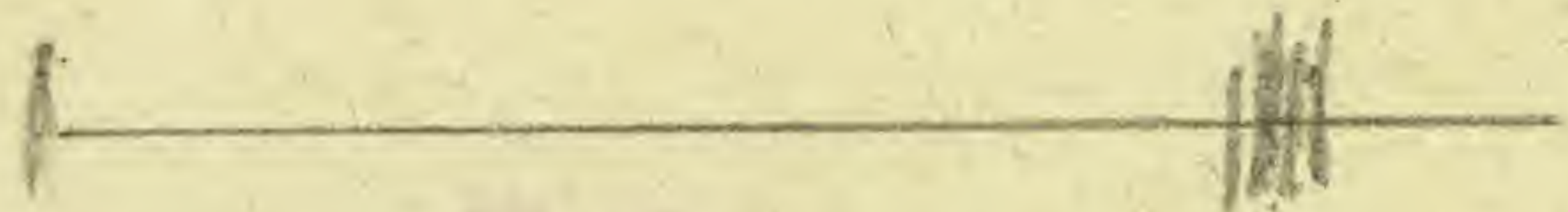


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wet
size of Pollen x 415

Pinus Halapensis
Algiers, Cosson Jan 6 1852

June 21 1864



0.037 - 0.040 lines

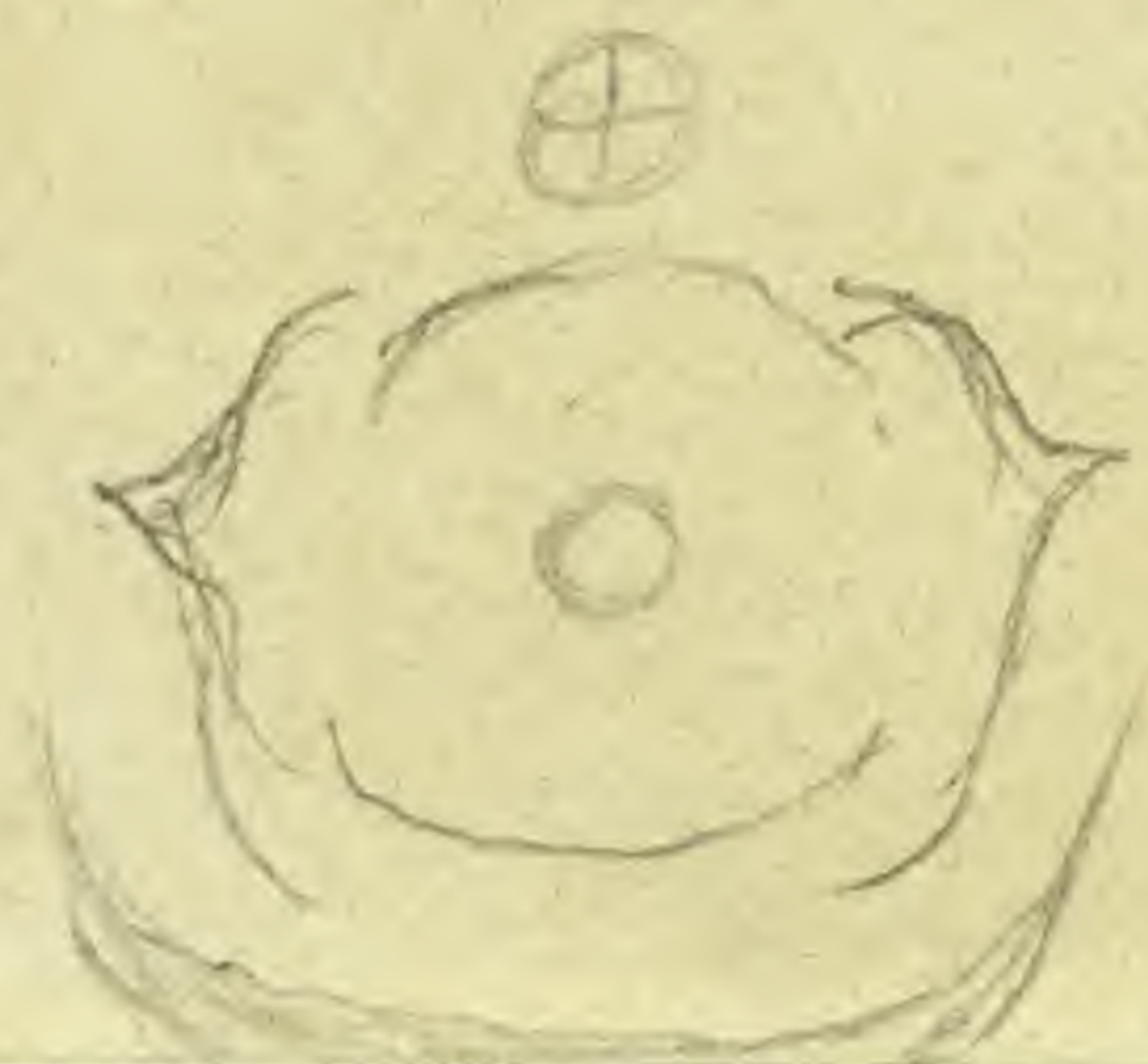
0.090 - 0.096 millim



x 4



x 10



4 or 5 scales



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32

33

tub 5 P. Benglana

tub 3 P. Gerardiana

475-483



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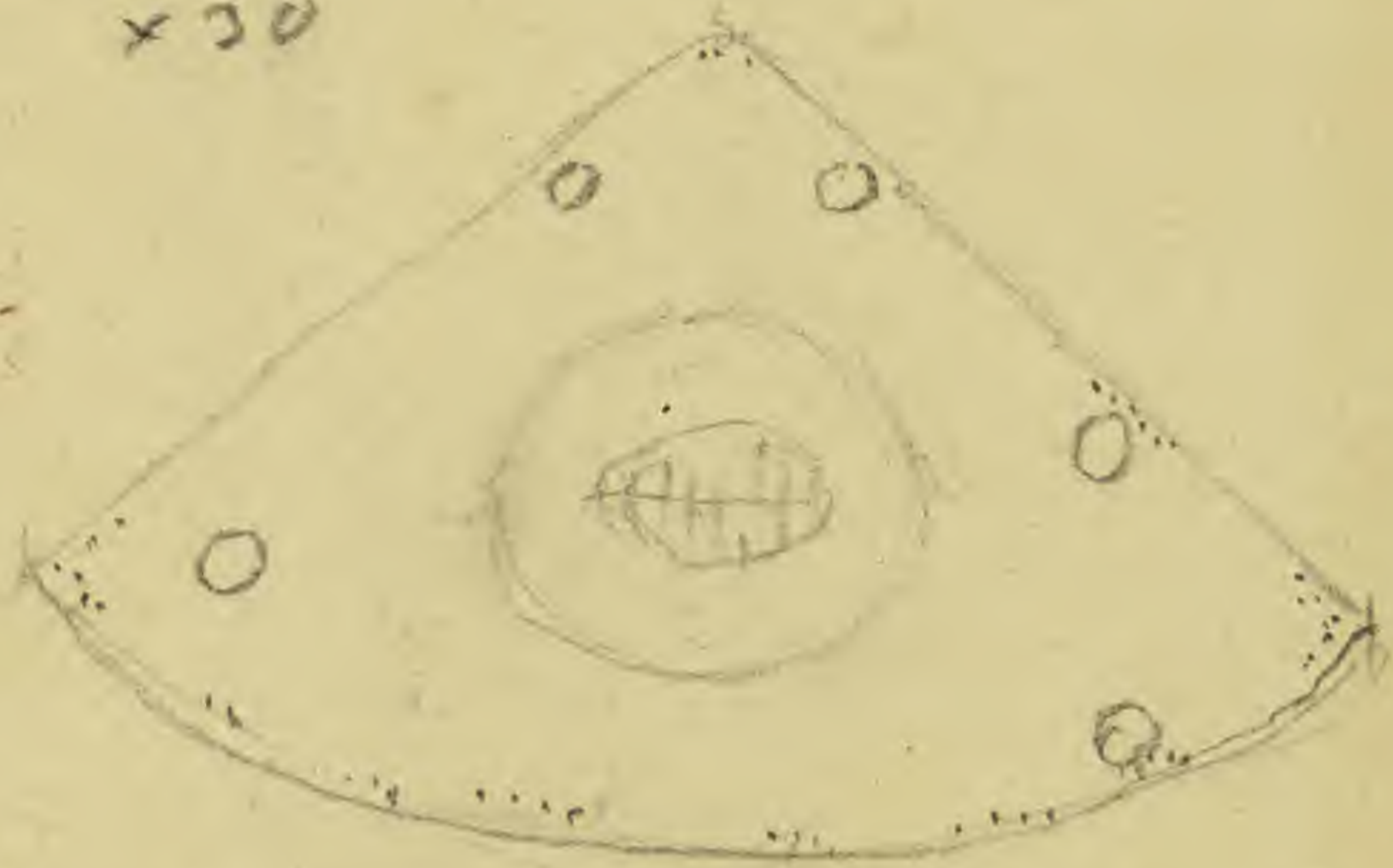
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leaf 1.5 mm wide Pison Bungean Junc

May 5 1878

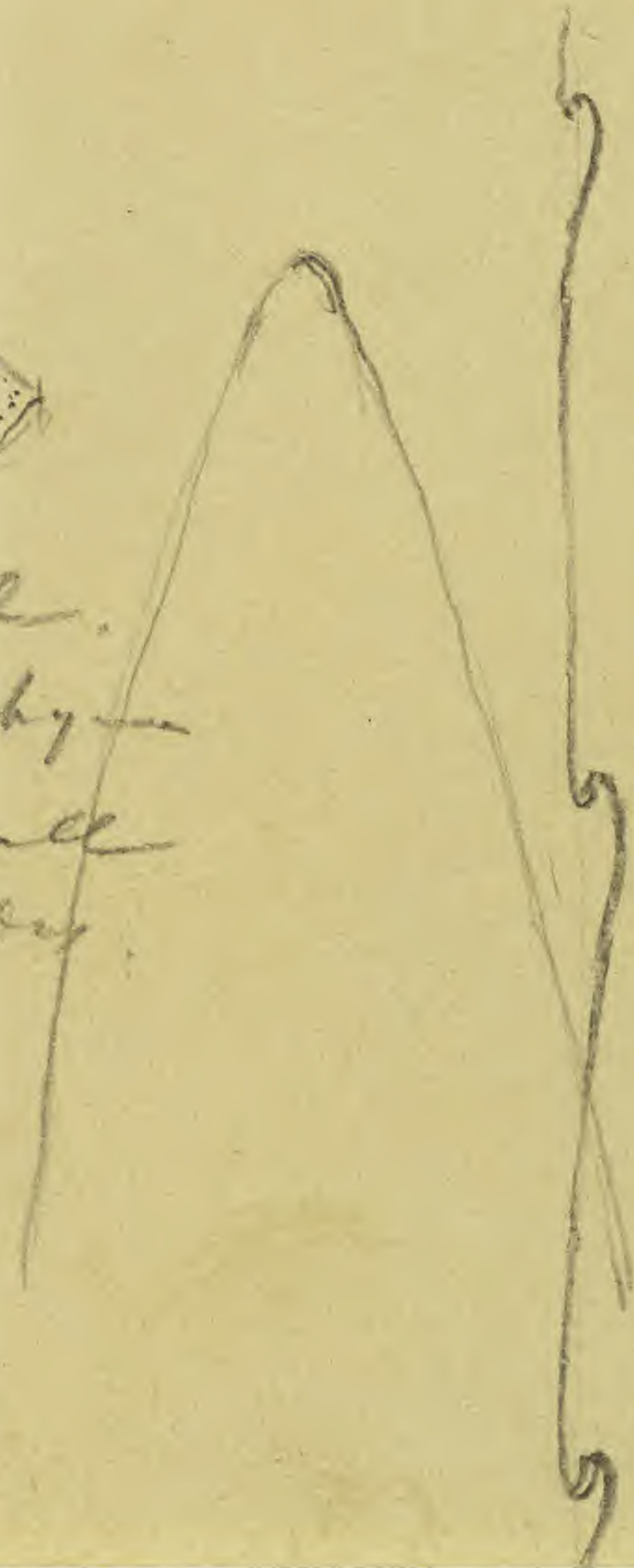
Bunge leg - China borealis

x 30



Stomata mostly marginal,
but also in parenchyma
hypodermis cells in small
bundles on all sides
and in corners

x 60



Teeth foliis terminis
(?) marginalibus Lewis & Clark

Pursh p. 398 only copies
Doubtless Murray

teeth remarkably thick
somewhat incurved



seed, Hb. New from
Mr. Hooker
supposed to belong here



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May 24 1878

Pinus Bungeana

leaf 1.8 mm wide

cult. China, Fortune - Coll

Brit. Mus

x 30



largest duct parenchymatous, lateral
 others, oft 6, periphonial, separate
 from epidermis by hypoderm cell - layer
 wood bundle almost single, oval



x 60



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cm

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No.
1006 Olive
Street.



PURE WINES AND LIQUORS FOR MEDICAL USE.

Cor. 5th
and
Walnut St

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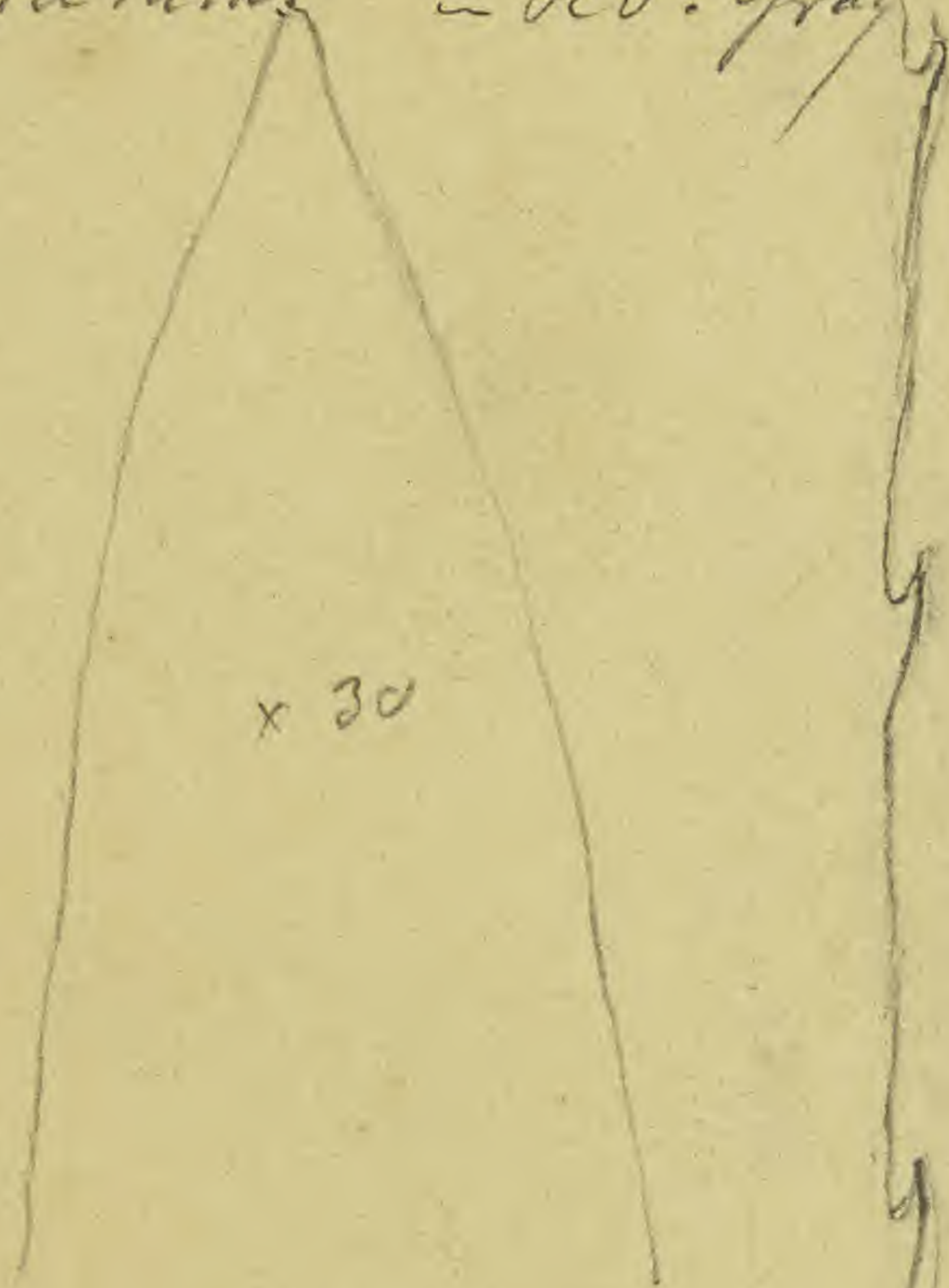


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P. Bungeana

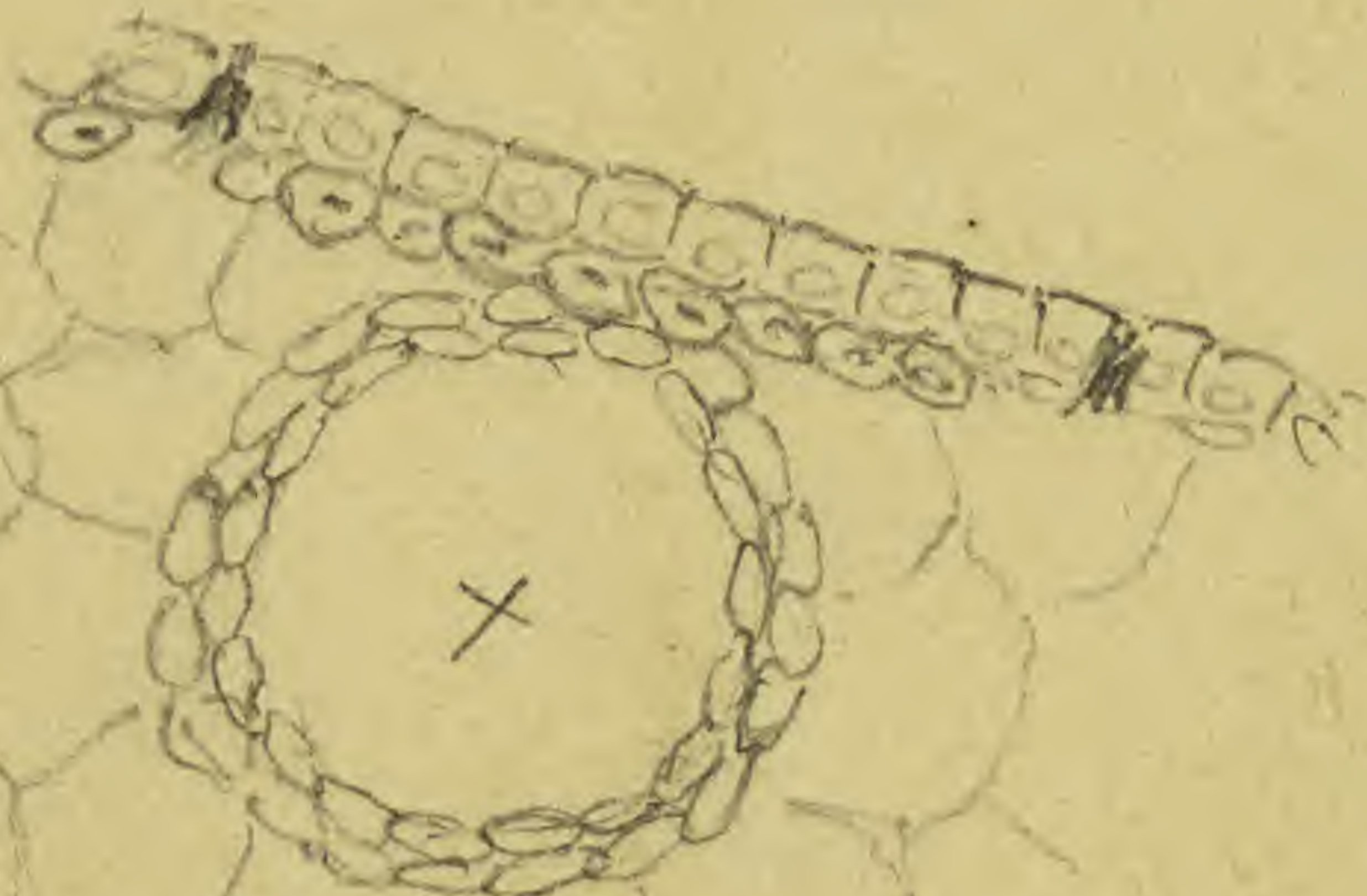
June 10, 78

Peking, S.W. Williams in Herb. Gray



x60

x150



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Pinus Bungeana

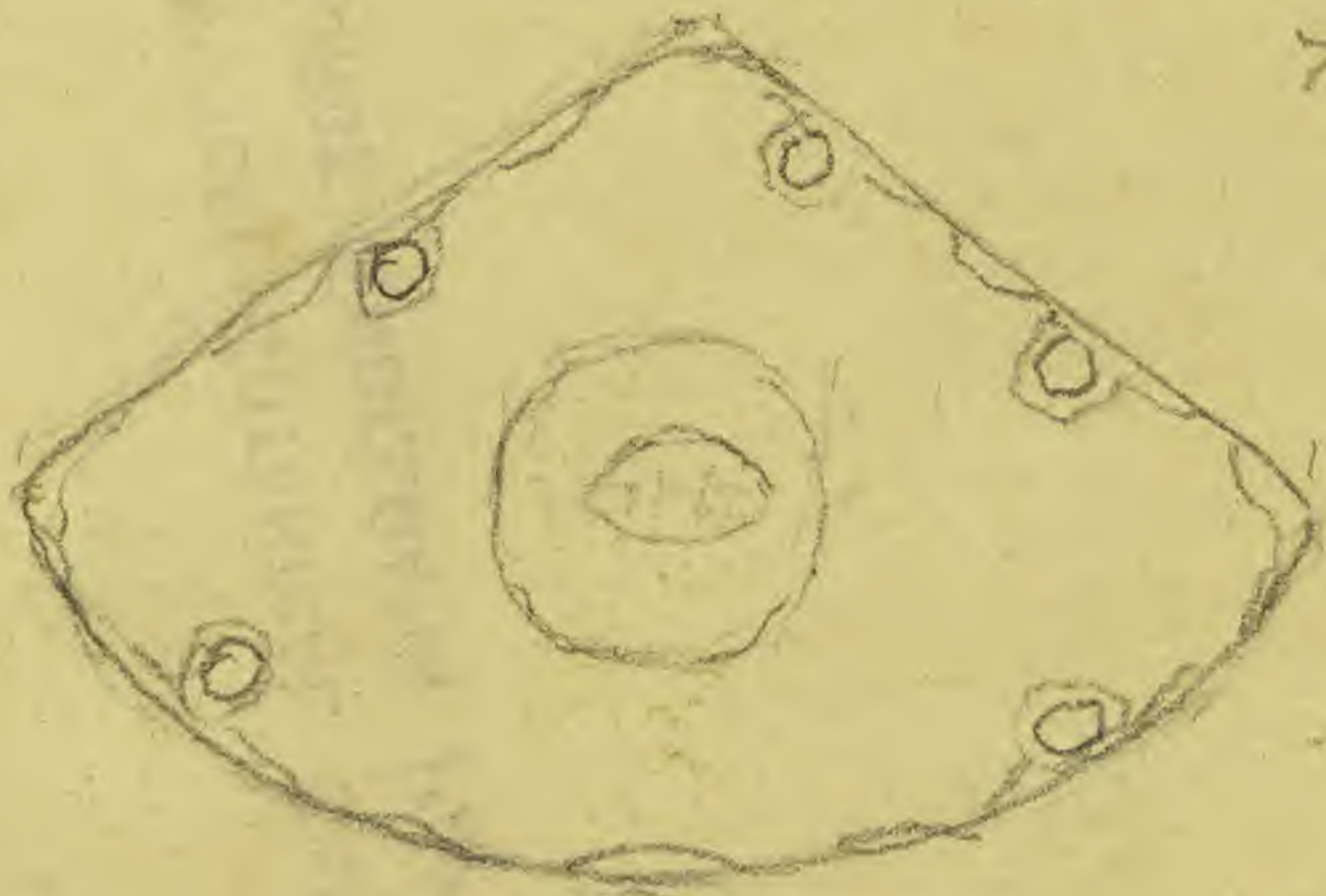
June 17 1878

x30

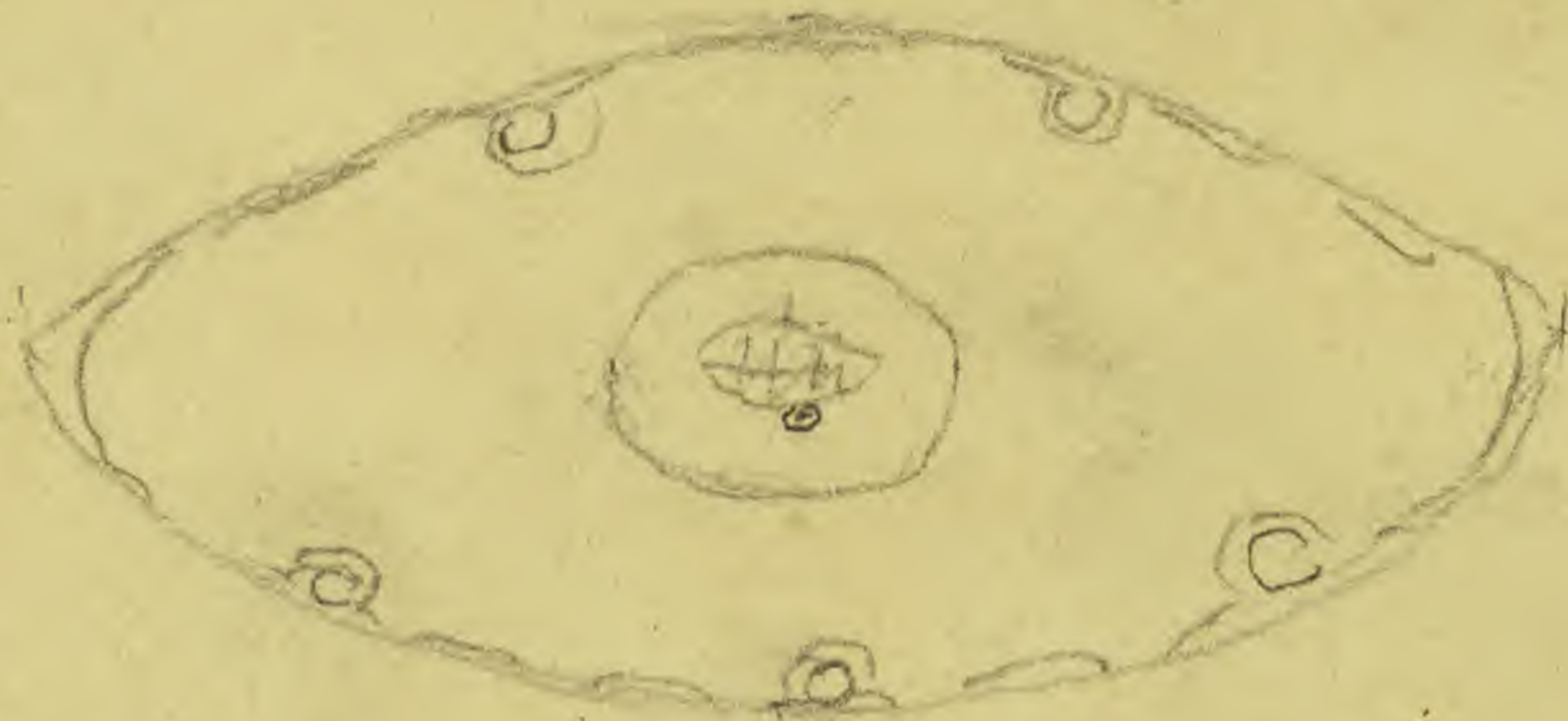
Hort. Bot. Missouri - fresh

2x5-6 series of stomata

7-8 below



leaves
of same bundle



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Leitch & Corlies

DRUGGISTS

South West
Corner Fifth
and Market
Streets.

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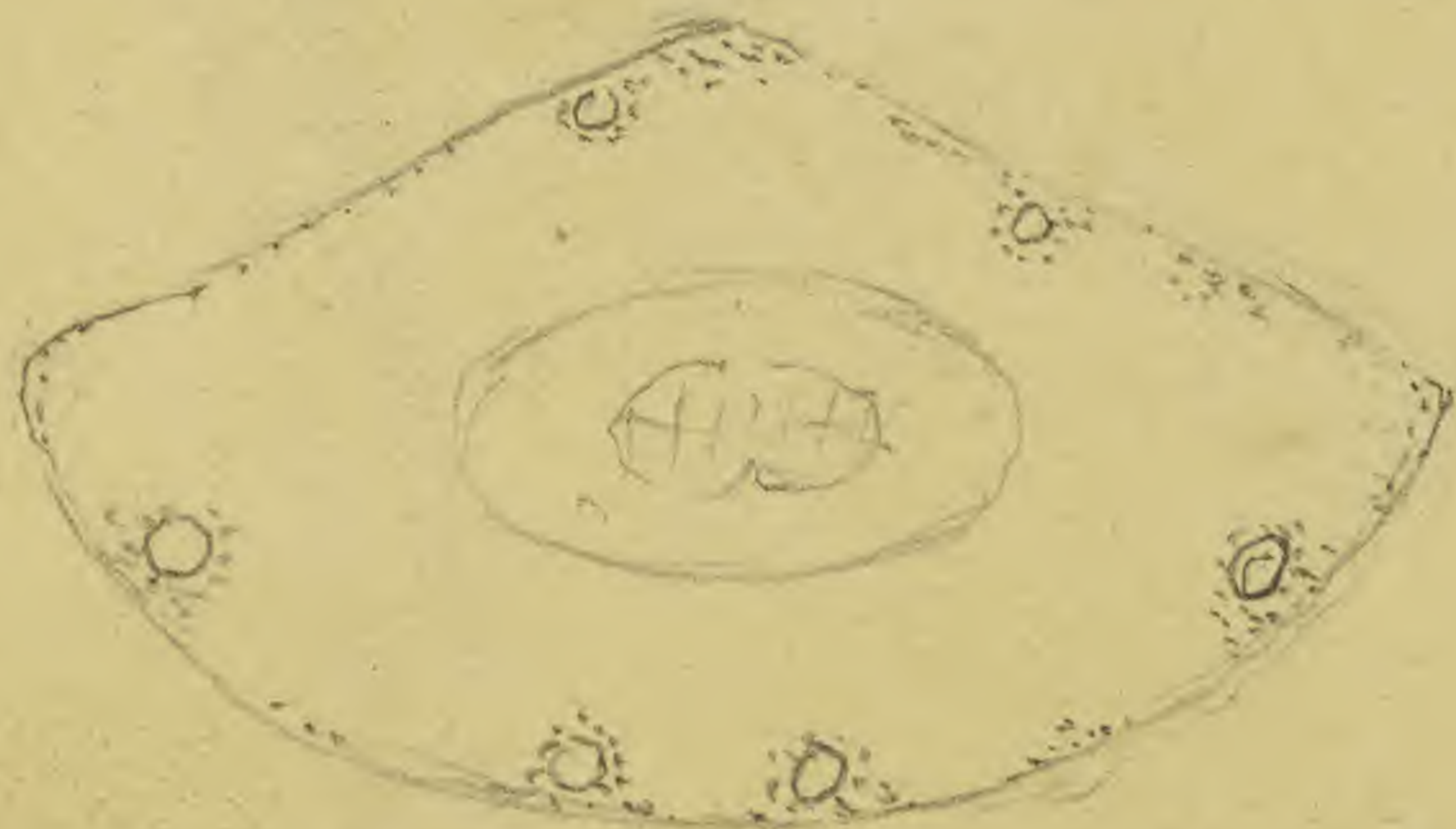


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Pinus Guardiana
India, Thompson

May 12 1879
(ex Hb Kew)

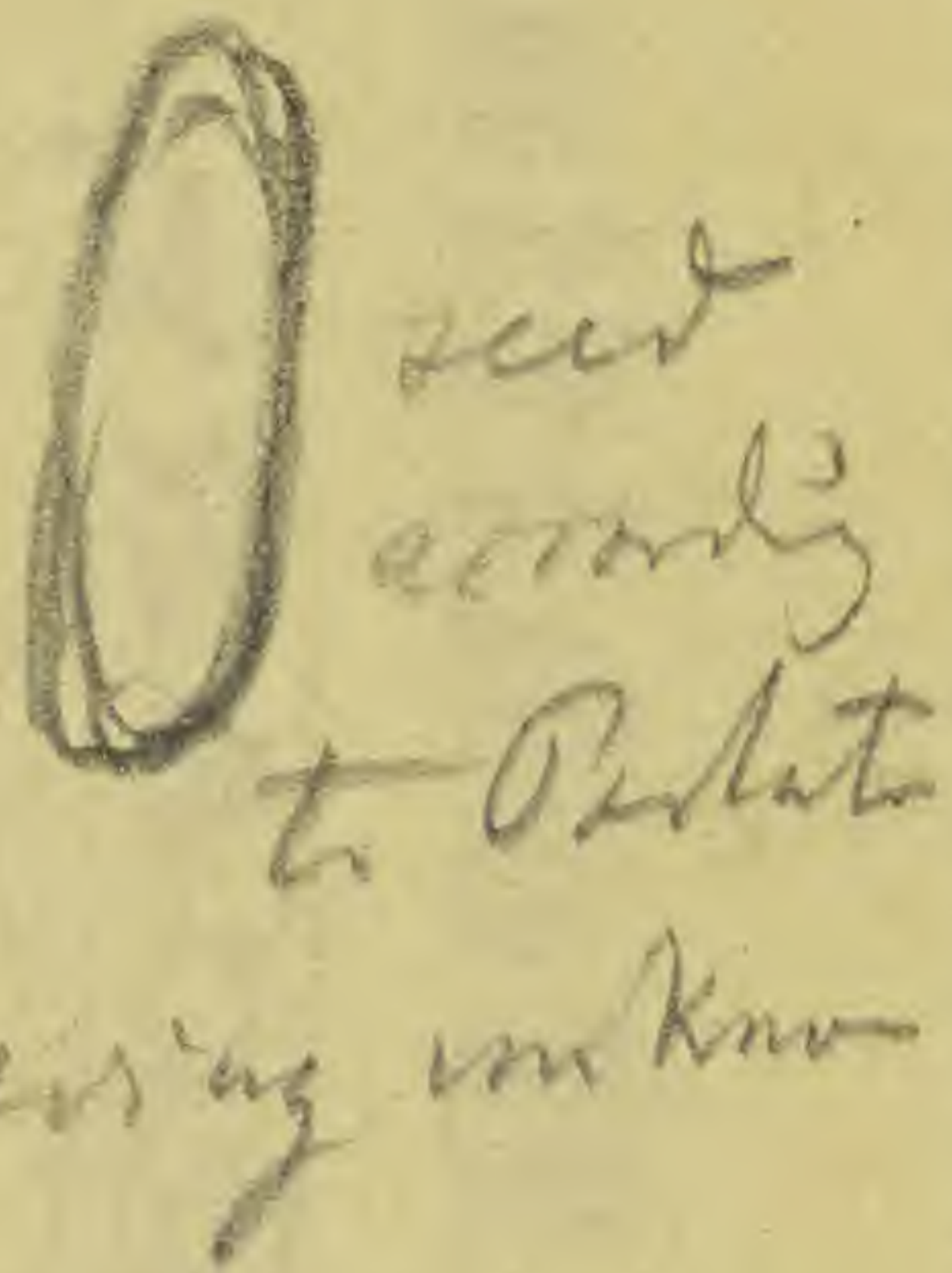
x 30



periph. ducts, mostly on lower
side, smaller and fewer
irregularly above surrounded
by hypoderm - likewise hypoderm
scarce - none in sheath, where
bundles of vessels not separated



x 30



seed
according
to Lambert
drawing unknown



Lambert's
figure

x 60



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Pinus Gerardiana

Nov 9 1879

Indian cone, obtained from the British

Museum - 1869

seeds extracted from the cone

which is 5 1/2 inches long



seed 9-10 mm long 7 wide
wing 16-17 " " 9-10 wide



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bbh11



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Pinus Gerardiana

Nov 15 1879



single ament
without involucre
immature



x10



x10

plumy



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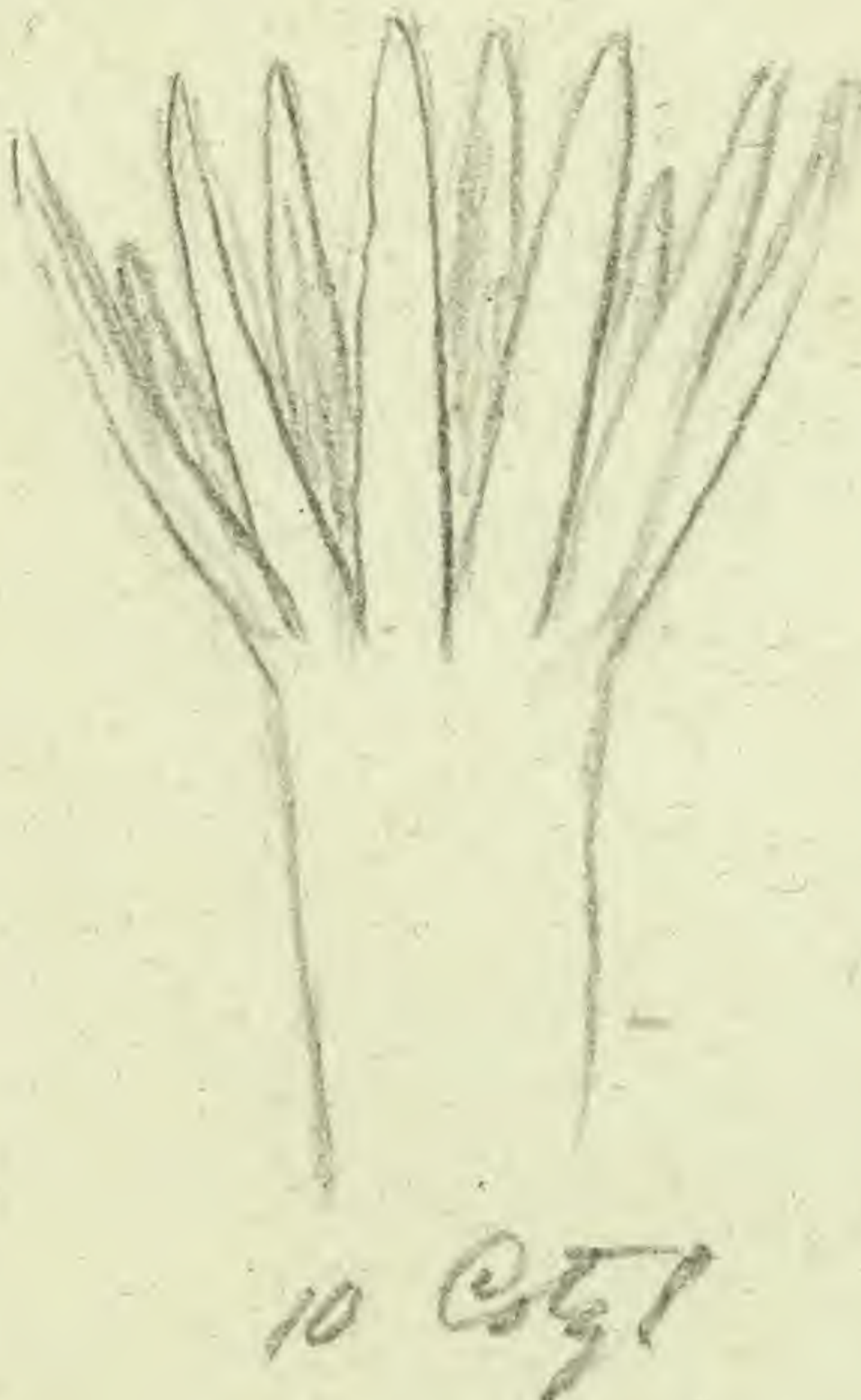
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Pinus Gerardiana
no 2. from New

March 11 1880



albu
&
embry x 4



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Pinus Bungeana

Nov 3 1879

J. Hoopes, West Chester Pa coll



11 Cotyledons
(10-12?)



$\frac{8}{13}$ order
about 40 scales
scales transversely wrinkled

transverse ridge of scales very prominent
stout prickles recurved



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